OFFICE OF THE NORTH DAKOTA STATE ENGINEER
FINAL RECOMMENDED DECISION

MEMO TO: Dale L. Frink, State Engineer, through MOL
Milton O. Lindvig, Director, Water Appropriation Division
FROM: Karen Goff, Water Resource Engineer
SUBJECT: Conditional Water Permit Application #5508 – Theodore Roosevelt Medora Foundation
DATE: March 1, 2002

Conditional water permit application #5508 was filed by the Theodore Roosevelt Medora Foundation. The application requests an annual appropriation of 400 acre-feet of water from the Little Missouri River at a maximum pumping rate of 5,000 gallons per minute (gpm), or approximately 11 cubic feet per second (cfs), for the irrigation of 100 acres of land. The proposed point of diversion is located in the SW ¼ of Section 3, T. 139 N., R. 102 W., Billings County.

The priority date of the application is July 13, 2001. The deadline for written comments regarding the proposed appropriation was 5:00 p.m. September 10, 2001. Four letters were received in response to the application from the National Park Service, the North Dakota Game and Fish Department, Badlands Lutheran Ministries, and Mr. Tom Adams. In a memo dated November 19, 2001, the application was recommended for approval. The recommended decision was sent to the people who submitted comments on November 29, 2001. The deadline for additional comments regarding the application was December 31, 2001. One additional comment letter was received from the National Park Service.

Project Description

The water will be used to irrigate an 18-hole golf course to be located south of Medora in Sections 3 and 10, T. 139 N., R. 102 W. The applicant plans to construct an off-stream storage reservoir so that water can be diverted from the Little Missouri River during periods of high flow and stored for irrigation use throughout the summer. Information provided by the applicant indicates that a detailed design of the storage

reservoir has not been completed at this point, but the proposed location is in the SE ¼ of Section 3. The proposed reservoir will have a capacity of 300 to 400 acre-feet. The applicant proposes to pump water from the river to the reservoir using two floating pumps with a capacity of 2,500 gpm, or approximately 5.5 cfs, each. The golf course will then be irrigated using the water stored in the reservoir.

According to the applicant, the requested annual appropriation of 400 acre-feet is intended to allow for extra storage to provide water to the golf course in the event of a sustained period of low flow in the river. An annual appropriation of 400 acre-feet would also provide sufficient water for the grow-in period of the golf course. The applicant has explained that the grow in period of a golf course requires abnormally high water usage, but that consumption decreases significantly after the turf has matured.

Analysis

According to the Soil Survey of Billings County, the soils in the area proposed for irrigation consist primarily of soils in the Havre and Banks series. According to the SCS Irrigation Guide for North Dakota, these soils are classified as irrigable. Using the irrigation guide, these soils can be shown to require up to 23 inches of water for grass in a normal year and up to 26 inches of water in a dry year.

Section 61-14-03 of the North Dakota Century Code states:

> "In the issuance of a permit to appropriate water for irrigation or in the adjudication of the rights to the use of water for such purpose, the amount of water allowed by the state engineer shall not be in excess of two acre-feet of water per acre per year, or the equivalent thereof, delivered on the land, except that during periods of sufficient water supply the state engineer, in accordance with the method of irrigation being used, the type of soil to which the water is to be applied, and other criteria established by the state engineer, may increase the amount of water allowed to three acre-feet per acre, per irrigation season, for a specified period of time which in no event shall be of greater duration than the period of sufficient water supply. Notwithstanding any other provision of this section, the state engineer may not allow more of an amount of water than can be beneficially used."

The applicant has requested an annual appropriation of 400 acre-feet to irrigate 100 acres, which is equivalent to 4 acre-feet per acre. However, the entire 400 acre-feet will not be used for irrigation in any one year. An annual appropriation of 400 acre-feet will

allow the applicant to store extra water when it is available in the river so that the golf course will have sufficient water available to sustain it through a dry year when sufficient flow may not be available in the river. In order to comply with Section 61-14-03 of the North Dakota Century Code, a condition should be placed on any permit issued limiting the quantity of water that may actually be applied to the land in any given year. Given the soils in the area and the high water needs of the golf course during the grow-in period, it may be possible for three acre-feet of water per acre to be beneficially used. Therefore, a permit could be issued for 400 acre-feet annually to allow the applicant to refill the reservoir, with the condition that only 300 acre-feet may actually be used for irrigation in any one year. Section 61-14-03 implies that the authorization to use more than 24 inches must be temporary in nature when it says, "a specified period of time which in no event shall be of greater duration than the period of sufficient water supply." In this case, the storage reservoir should provide a reliable water supply at all times, with pumping from the river limited to high flow periods only.

The U.S. Geological Survey (USGS) operates two gaging stations on the Little Missouri River downstream of the proposed point of diversion. USGS gage No. 06336000, Little Missouri River at Medora, is located in the NE ¼ of Section 27, T. 140 N., R. 102 W. approximately 3 miles downstream from the proposed golf course. This gage was operated from May, 1903 to October, 1908; for periods from October, 1921 to September, 1924; from September, 1928 to September, 1934; and from October, 1945 to September, 1975. This gage was reactivated in the summer of 2001.

USGS gage No. 06337000, Little Missouri River near Watford City, is located in the NW ¼ of Section 35, T. 148 N., R. 99 W. This gage has a period of record from October 1934 to the present.

Duration tables of daily flow values at both gages were obtained from the USGS for each month for the period of record. Tables 1 and 2 illustrate the availability of water at the Medora and Watford City gages, respectively, as a percent of the days of the month that various flows were equaled or exceeded in the river over the period of record.

There are 15 senior water permits downstream of this application on the Little Missouri River, all 15 of which are for irrigation. These permits are listed by reach in Tables 3 and 4. The quantities listed in Tables 3 and 4 are the quantities approved by each

%	Flows (cfs)						
	Mar	Apr	May	Jun	July	Aug	Sep
95	0.09	27.4	10.9	20.7	14.3	2.36	0.86
90	4.12	62.7	27	47.4	30.9	7	3.77
85	32.9	82.3	37.9	68.9	47.9	12.2	6.56
80	57.5	100.4	48.3	100.4	60.6	16.5	9.46
75	84.2	119.2	61.7	132.5	74.6	21.1	12.8
70	112.5	142.7	84.8	165.1	90.6	27.3	16.1
65	141	170.6	109	198.4	108.4	32.9	19.9
60	187.7	202.5	133.6	267.4	126.8	38.7	24.9
55	250.6	259	164.7	348.4	149.7	47.5	30
50	335.2	337.1	201.6	433.3	175.3	57.2	35.3
45	454.8	448.3	249.4	547.5	208.4	68.7	43.2
40	565.3	578.8	314.1	689.9	251.5	84.1	54.1
35	675.1	741.6	407.7	854	304.1	103.3	67.1
30	879	959.4	535.4	1073.5	362.2	132	83.3
25	1156.6	1212.1	660.1	1312.2	445.6	172.8	103.2
20	1550.7	1461.2	841.2	1568.9	546.8	237.7	129
15	2059.5	1858.3	1116.9	2015	773.6	361.9	209.9
10	3374	2706.9	1656.1	2836.7	1063.2	594.9	362.7
5	5869.1	6000.9	3367.3	4855.3	1854.4	1112	684.3

Table 1. Availability of water at the Medora gage.

%	Flows (cfs)						
	Mar	Apr	May	Jun	July	Aug	Sep
95	0.07	61.1	33.4	29.6	18	6.67	2.84
90	2.97	94.8	53	60.4	46.2	16.4	7.09
85	12	120.6	69.2	88	70.6	24.9	12
80	47.7	153.3	86.8	119.8	91.5	32.9	16.4
75	77.5	200	103.6	151.4	112	44.5	20.8
70	115	238.7	126.6	187.5	133	54.6	25.5
65	170.9	280.1	151.8	231.2	154.3	64.2	31.1
60	235.3	324.2	181.9	288.7	178	74.2	39.9
55	302.1	371.5	216.9	353.6	201.7	84.2	49.1
50	376.4	448.8	257.5	425.7	232.6	96.7	58.9
45	482.4	578.4	305.3	517.3	271.5	110.8	71.6
40	637.9	699.5	363.7	627.6	315	127.4	85.8
35	874.3	848.2	440	758.2	377.6	150.3	102.3
30	1211.5	1040.3	559.8	916	446.4	177.5	122.7
25	1663.8	1295.3	711.7	1145.9	544.3	213.9	147.3
20	2265	1628.1	885.8	1524.9	671.6	265.1	192.2
15	3161.7	2134	1150.5	2068	853.3	339	258.5
10	5104.6	3233.8	1777.2	2867.4	1241.1	480.9	386
5	9188.3	6280.3	3353.1	4768.2	2052	781.4	692

Table 2. Availability of water at the Watford City gage.

permit, with two exceptions. Perfected water permit #1714 has an approved pumping rate of 3,000 gpm, but no pumping rate is included in Table 3. This is because permit #1714 now shares an intake with permit #5479, with 400 gpm being the total combined pumping rate. Permit #1714 is in the process of being updated. Since 400 gpm is listed for permit #5479, it was not listed for permit #1714. Perfected water permit #188 does not list an authorized pumping rate on the permit, but indicates that the pumping rate was to be field verified. Information in water permit file #188 indicates that the maximum rate of the pump used under permit #188 is 2,000 gpm, as included in Table 4.

Permit #	Priority	Irrigation Type	Location	Volume, AF	Acres	Rate, gpm
233	1/10/40	Sprinkler	14410221AC	67	52	700
524	4/8/53	Flood	14410208A	160	148.8	6,025
946	10/23/61	Flood	14410208CA	92.8	92.8	0
1637	5/14/69	Flood	14110107AA	72.4	72.4	0
1710	5/4/70	Flood	14210131CA	80.9	53.9	4,500
1714	5/28/70	Sprinkler	14510234DD	91.6	91.6	0
1802	9/21/71	Flood	14410228DB	29	29	2,700
2962	8/9/77	Sprinkler	14410333B	108.3	132	750
3199	9/13/79	Sprinkler	14210223A	220	146.3	1,000
5479	2/13/01	Sprinkler	14510235A	73.7	49.1	400
			Totals	**995.7**	**867.9**	**16,075**

Table 3. Water Permits Between the Medora and Watford City Gages

Permit #	Priority	Irrigation Type	Location	Volume, AF	Acres	Rate, gpm
33D	12/27/37	Flood	14809606CD	140	77	1,450
188	12/10/37	Sprinkler	14709901AA	84	56	2,000
683	8/3/56	Flood	14809623CD	73	107	1,450
1011	5/23/62	Sprinkler	14809728DB	45	38	1,350
3545	3/16/82	Sprinkler	14709801A	185	150	600
			Totals	**527**	**428**	**6,850**

Table 4. Water Permits Downstream of the Watford City Gage

The total existing demand downstream of this application is 22,925 gpm, or approximately 51.1 cfs. All of this demand occurs downstream of the Medora gage. The demand in the reach of the Little Missouri River between the Medora gage and the

Watford City gage is approximately 35.8 cfs. Of this amount, 29.5 cfs is associated with permits for flood irrigation type systems and the remaining 6.3 cfs is associated with permits for sprinkler irrigation systems. The demand downstream of the Watford City gage is approximately 15.3 cfs, of which 6.5 cfs is associated with flood irrigation and 8.8 cfs is associated with sprinkler irrigation.

The drainage area of the Little Missouri River at the Medora gage is approximately 6,190 square miles. All of the water permits in the reach of the river between the Medora and Watford City gages, except for one, are located upstream of the confluence of Beaver Creek and the Little Missouri River in Section 34, T. 145 N., R. 102 W. According to a report published by the North Dakota State Water Commission in 1966 titled "Drainage Area Data for Little Missouri River Basin", the drainage area of the Little Missouri River just upstream of the Beaver Creek confluence is approximately 6,816 square miles, so the drainage area available to the permits in the reach of the river downstream of Medora is about 10% greater than the drainage area at the Medora gage.

In order to ensure that downstream senior appropriators are not unduly impacted by the proposed appropriation a minimum flow condition should be attached to any permit issued restricting the applicant to pumping only when the flow in the river is above some minimum level. As noted previously, the total demand in the reach of the Little Missouri River between the Medora gage and the Watford City gage is approximately 35.8 cfs, but requiring that a flow of 36 cfs be maintained at the Medora gage while the applicant is pumping is probably excessive. Of the total downstream demand, 29.5 cfs is associated with permits for flood irrigation that use water primarily during the spring runoff and periods of high flow. The remaining 6.3 cfs is associated with permits for sprinkler irrigation that use most of their water during the months of June, July, August, and September. The applicant has requested a period of use from March 1 to July 1, so the proposed withdrawals should not ordinarily have much impact on permits for sprinkler irrigation.

Of the permits for flood irrigation, all are capable of pumping their entire authorized volume of water in less than 10 days at their authorized pumping rates, so it is unlikely that they would all be pumping at the same time in most cases. Rather than requiring a minimum flow sufficient to meet the entire 29.5 cfs demand from the flood

irrigation permits, it may be more realistic to assume that only a portion of the total demand would exist at any one time. A peak demand equal to three-quarters of the total demand is often used in the design of a water supply for irrigation districts and the same philosophy is applicable here. Taking into account the fact that there will be some increase in flow downstream of the gaging station due to the increased drainage area, a minimum flow equal to two-thirds of the total demand should be sufficient to protect downstream senior appropriators. Therefore, a minimum flow of 20 cfs passing the Medora gage is recommended. Under the prior appropriations system, the applicant could be required to cease pumping in order to protect senior water rights downstream in the event that 20 cfs is not sufficient.

The drainage area at the Watford City gage is approximately 8,310 square miles, which represents an increase of about 34% over the drainage area at the Medora gage. With a minimum flow requirement of 20 cfs at the Medora gage, senior appropriators downstream of the Watford City gage should not be unduly impacted by the proposed appropriation.

Real-time streamflow data at the Medora gage is available on the internet on the USGS website (http://nd.water.usgs.gov/public/realtime/rt_latest_table.html) so the flow in the Little Missouri River can easily be monitored. A condition should be attached to any permit issued requiring pumping to cease when flows in the river at the Medora gage are 20 cfs or less. The applicant should check the flow in the river before starting to pump and should monitor the flow in the river while pumping. In order for the applicant to pump at the requested maximum rate of 11 cfs, a flow of 31 cfs will be required at the gage before they begin pumping. The applicant plans to have two pumps, 5.5 cfs each, so it will be possible for the applicant to begin pumping using only one of their pumps when the flow at the Medora gage is 25.5 cfs or greater. In either case, the applicant will be required to stop pumping if the flow at the gage drops below 20 cfs. The period of use requested on the application is from March 1 to July 1, so the applicant will only be authorized to withdraw water from the river during that time period, regardless of the flow at other times of the year.

The data presented in Table 1 shows that a flow of 31 cfs was present on a frequent basis over the period of record at the Medora gage during the spring months,

especially April and June when the flow in the river was greater than 31 cfs more than 90% of the time. At the requested pumping rate of 11 cfs, it would take the applicant 440 hours to pump the requested annual appropriation of 400 acre-feet of water. This is equivalent to approximately 18 days pumping 24 hours per day. Review of data obtained from the USGS shows that a mean daily flow of 31 cfs or greater was available in the river more than 18 days in the month of April alone in 40 out of 43 years of record available for that month. In the three remaining years, a flow of 31 cfs or greater was available for more than 18 days during the months of April, May, and June. Therefore, the applicant should be able to reasonably obtain the amount of water requested by this application by pumping only when a flow of 20 cfs can be maintained at the Medora gage.

Comments Received and Response

The National Park Service (NPS) submitted comments in response to this application in a letter dated September 7, 2001. In that letter, the NPS expresses concern that the proposed appropriation may adversely impact the resources of Theodore Roosevelt National Park, the boundary of which is located approximately 5 miles downstream of the proposed point of diversion. The letter states:

> "The NPS is concerned that the diversion rate proposed by the applicant may be detrimental to the flora and fauna dependent on instream flows in the Little Missouri River within Theodore Roosevelt NP. These resources include, but are not limited to, cottonwood, green ash, tiger salamander, sturgeon chub, beaver, bison, bighorn sheep, and the northern leopard frog."

The letter from the NPS also states:

> "Federal case law suggests the NPS is entitled to Federal reserved water rights associated with the reserved lands within Theodore Roosevelt NP. The priority date for these rights is the date when the land was reserved. These NPS reserved rights have not been judicially quantified."

Included in the letter is a flow duration table developed by the NPS for the period from March 1 to July 1 showing the flows available in the river and the percent of the flow that would be depleted by the requested 11 cfs withdrawal rate. The NPS concludes that:

> "...the magnitude of the diversion without adequate storage proposed by the applicant during the March 1 – July 1 time period would impair the NPS's ability

to protect the resources it is mandated to protect. Therefore, it is our belief that the diversion is likely to impair the NPS's inchoate Federal reserved water rights on the Little Missouri River. In summary, the NPS believes that this proposed diversion ... may adversely impact water-dependent flora and fauna along the Little Missouri River within Theodore Roosevelt NP ... These impacts would not be in the public interest as described in North Dakota Century Code §61-04-06 ... Therefore, the NPS opposes the granting of a permit for this application as it currently stands."

The letter from the NPS goes on to state:

"However, the NPS would not oppose the granting of a permit if the diversion rate were significantly reduced or the applicant were only allowed to divert water at this rate when the flow in the Little Missouri River were above some designated flow level. Additionally, adding a storage facility would help the applicant to be able to divert water only during times of higher river flows. The NPS is very willing to work with the State of North Dakota and the applicant to assist in determining this flow level."

In response to the recommended decision dated November 19, 2001, the NPS submitted a second letter dated December 21, 2001. In the recommended decision, a condition was recommended that would require the applicant to cease pumping when the flow in the Little Missouri River at Medora is 20 cfs or less. The NPS believes that the recommended minimum flow is insufficient to protect "the water rights and water-related resources of Theodore Roosevelt National Park". The letter states:

"The NPS respectfully disagrees with your conclusion that a 20 cfs minimum flow will protect Federal reserved water rights or will not unduly impact water-dependent resources within the park. Insufficient data exists at this time to determine the effects of the proposed withdrawal on park resources."

The letter goes on to state:

"However, NPS suggests that the public interest would be best served by using an alternative withdrawal rate as such an approach would minimize the possibility that the proposed diversion would adversely affect the fish and game resources and public recreational opportunities associated with the Little Missour River."

The NPS proposes an alternative withdrawal scenario in which the "applicant would be permitted to withdraw 5% of the flow at the Medora gaging station, not to exceed 11 cfs, during the March 1 through July 1 time period". This withdrawal scenario is explained by the NPS as follows:

"The five percent figure was selected because, according to the U.S. Geological Survey, it represents the average error of a standard wading discharge measurement rated as 'good'. It is unlikely that a withdrawal that diverts an amount that is less than or equal to an amount that is within the error limits of the measurement would have an adverse impact on the water-dependent resources of Theodore Roosevelt NP."

The NPS has determined that over the period of record, the applicant would have been able to obtain 400 AF of water each year under this withdrawal scenario. The NPS also states that "if an extreme drought occurs that prevents the applicant from diverting 400 afy by July 1 in some future year, the NPS is willing to consider alternative withdrawals beyond July 1 if the applicant and the State Engineer agree."

The NPS conludes by stating:

"The NPS believes that until such time as there is sufficient data to quantify the amounts of water necessary to protect and preserve the water-dependent resources associated with the Little Missouri River within Theodore Roosevelt NP, that the proposed alternative withdrawal rate is more likely to prevent injury from occurring to these water-dependent resources than the proposed withdrawal rate within the recommended decision."

The position of the NPS is based on the assumption that there are federal reserved water rights associated with the reserved lands within the Theodore Roosevelt National Park. There has been no negotiated agreement or judicial determination that the Park has reserved water rights. The State Engineer recognizes, as a general rule, that when the federal government withdraws its land from the public domain and reserves it for a federal purpose, the government, by implication, reserves appurtenant water then unappropriated to the extent needed to accomplish the primary purposes of the reservation. However, claims for implied federal reserved water rights require a high level of scrutiny and may only be implied if:

1. They are necessary to fulfill the primary purposes of the reservation;
2. Without a reserved water right, the primary purposes of the reservation will be entirely defeated; and
3. The claimed water right is the minimum amount necessary to achieve the primary purposes of the reservation.

The NPS did not provide any supporting documentation of its claims to enable the State Engineer to determine whether a reserved right may exist, nor has the NPS given any

indication as to the quantity of water needed to meet the primary purposes of the portion of the national park reserved from the public domain.

The NPS has indicated that insufficient data exists at this time to determine the effects of the proposed withdrawal on park resources and that there is insufficient data available to quantify the amounts of water necessary to protect the water-dependent resources of Theodore Roosevelt National Park. Given this lack of data, any conclusions regarding impacts to fish and game resources and public recreational opportunities are unsubstantiated.

The NPS has proposed a withdrawal scenario that would limit the applicant's pumping rate to 5% of the flow at the Medora gage, rather than the recommended minimum flow of 20 cfs. The NPS has stated that the 5% withdrawal scenario would be "more likely to prevent injury from occurring to these water-dependent resources than the proposed withdrawal rate within the recommended decision" and believes that the public interest would be best served by this alternative withdrawal rate. The rational behind the 5% restriction is that 5% is the average error of a standard wading discharge measurement. Because 5% is the average discharge measurement error, any withdrawals at a rate equal to less than 5% of the flow in the river would result in no measurable change in the flows through the national park. From the NPS perspective, any change in flow greater than 5% would be detectable and would therefore be unacceptable. This rationale implies that the NPS believes that it has a water right for all of the water that currently flows through the Theodore Roosevelt National Park. No evidence has been submitted to the State Engineer to substantiate such a claim.

In order for the applicant's withdrawals to meet the 5% restriction proposed by the NPS, a flow of 220 cfs would be required in the Little Missouri River before the applicant could pump at the maximum requested pumping rate of 11 cfs. Over the period of record, a flow of 220 cfs has been available in the Little Missouri River during the months that the applicant will be authorized to withdraw water approximately 57% of the time in March, 58% of the time in April, 48% of the time in May, and 63% of the time in June. Therefore, the applicant could pump at their maximum rate approximately half of the time during these months without exceeding the 5% criteria desired by the NPS. Pumping at the maximum pumping rate of 11 cfs it will only take the applicant approximately 18

days, pumping 24 hours per day, to pump the requested annual appropriation of 400 AF, so most of the time the flow in the river will remain unchanged from the present conditions. The recommended minimum flow condition will require the applicant to cease pumping when flows in the Little Missouri River at the Medora gage are 20 cfs or less. In order for the applicant to pump at the requested maximum rate of 11 cfs, a flow of 31 cfs will be required at the gage. The 11 cfs pumping rate represents 35.5% of the 31 cfs flow. Therefore, under this condition, the applicant's withdrawals will never represent more than 35.5% of the flow in the river.

Section 61-04-06.2 of the N.D. Century Code states that "the state engineer may issue a permit subject to fees for water use, terms, conditions, restrictions, limitations, and termination dates the state engineer considers necessary to protect the rights of others, and the public interest". Under this section, any condition placed on a water permit must be necessary in order to protect the rights of others or the public interest. The recommended minimum flow condition was established in order to protect senior water rights downstream. The NPS has stated that they believe the recommended minimum flow is insufficient to protect "the water rights and water-related resources of Theodore Roosevelt National Park". However, since the NPS has provided no documentation that would allow the State Engineer to determine whether a reserved water right exists and no evidence to substantiate claims that the water-related resources of the national park would harmed by the proposed appropriation, there is no basis on which to justify a more restrictive minimum flow condition.

The North Dakota Game and Fish Department (Department) submitted comments in response to the proposed appropriation in a letter dated September 7, 2001. The letter states:

> "Without proper precautions the withdrawal of water from the Little Missouri River could cause negative impacts to the sturgeon chub. This would be through impingement or emigration into the irrigation delivery system depending on whether it is a pumped system or a gravity fed storage basin. The sturgeon chub have suffered serious population declines and were recently evaluated for listing as a federally threatened or endangered species. They were not listed but a recovery plan has been implemented by initiating a stocking program in 1997, 1998 and 1999 in the Little Missouri River within the South Unit of the Theodore Roosevelt National Park."

The Department suggests that the following recommendations be included as conditions on the permit if issued:

1. "The intake shall be screened and maintained with ¼" or smaller mesh size openings."
2. "Intake velocities shall not exceed ½ foot/second."
3. "Pumping sound levels shall not exceed 75DB at 50 feet."

The letter from the Department also states that in the design of the golf course and storage reservoir, consideration should be given to ways of minimizing the opportunity for contaminants in the form of pesticides and fertilizers to reach the Little Missouri River. The Department suggests that the applicant refer to an informational brochure entitled "Environmental Principles for Golf Courses in the United States".

The State Engineer can place conditions on water permits if those conditions are related to matters within the State Engineer's jurisdiction, in accordance with Section 61-04-06.2 of the N.D. Century Code. Matters within the State Engineer's jurisdiction are those things that are affected by the direct appropriation of water. Prior to issuing a water permit, one of the factors the State Engineer must consider is the effect on fish and game resources and public recreational opportunities resulting from the proposed appropriation. In a letter dated October 15, 2001, Jack Marquart, on behalf of the applicant, states that they "plan to design intake systems that prevent the possibility of impingement of vertabrates in the river". Mr. Marquart also stated in a telephone conversation that he had spoken with the Department regarding their concerns. Since the applicant will address the Department's concerns in the design of their intake, it will not be necessary to attach the conditions recommended by the Department to the permit. The noise related to the operation of the pump is not a direct impact from the appropriation or use of the water and may not be within the authority of the State Engineer to regulate. No evidence was submitted that would justify attaching a condition related to the noise level to the permit.

Since water will be pumped from the river into a reservoir and then from the reservoir to the golf course, there should be no opportunity for backflow from any chemigation that may take place to reach the river. The only potential source of contamination from pesticides and fertilizers would be runoff from the golf course after chemicals had been applied. As suggested by the Department, it may be beneficial for the applicant to consider ways to minimize the opportunity for pesticides and fertilizers to

reach the Little Missouri River. However, the stipulation of best management practices (BMPs) related to the use of agricultural chemicals may not be within the jurisdiction of the State Engineer.

The Badlands Lutheran Ministries submitted comments in response to this application in a letter dated August 17, 2001. The letter expresses concern "about the intent of the use of the water, where the irrigation development would be, if it would effect the safety of the campers or if it would even be available for swimming and boating." The letter states that "the campers have enjoyed the accessibility and use of the river." They indicate that they may have further comments when they have more information about the project and ask that they be kept informed of any developments regarding this application.

The letter from the Badlands Lutheran Ministries does not say where they are located, so it is difficult to determine what effect, if any, the proposed golf course and storage reservoir may have on their campers. As described previously, the water will be used to irrigate an 18-hole golf course to be located south of Medora in Sections 3 and 10, T. 139 N., R. 102 W. The proposed location of the storage reservoir is in the SE ¼ of Section 3. In a telephone conversation, Jack Marquart stated that the proposed reservoir will be located on the applicant's land and that it will not be visible from roads. He further stated that the reservoir will be fenced.

Mr. Tom Adams of Medora submitted a letter in support of the project. This letter was received on August 28, 2001. He states:

> "I think taking water at times when the river is high will not hurt one thing. When the river is high the water runs off in a short time and is on its way to the Gulf of Mexico. By storing some of this water to be used the rest of the summer makes good sense to me. This project could help the economy of the whole area. I can't see that it would hurt anything. I support this project."

Recommendation

Section 61-04-06 of the N.D. Century Code establishes the criteria the State Engineer must consider when evaluating an application for a conditional water permit application. This section states:

"...The state engineer shall issue a permit if he finds all of the following:

1. The rights of a prior appropriator will not be unduly affected.
2. The proposed means of diversion or construction are adequate.
3. The proposed use of water is beneficial
4. The proposed appropriation is in the public interest. In determining the public interest, the state engineer shall consider all of the following:
    a. The benefit to the applicant resulting from the proposed appropriation.
    b. The effect of the economic activity resulting from the proposed appropriation.
    c. The effect on fish and game resources and public recreational opportunities.
    d. The effect of loss of alternate uses of water that might be made within a reasonable time if not precluded or hindered by the proposed appropriation.
    e. Harm to other persons resulting from the proposed appropriation.
    f. The intent and ability of the applicant to complete the appropriation."

The first criterion that must be met in order for this application to be approved is that the rights of prior appropriators will not be unduly affected. The source of water is adequate to support this proposed demand without unduly affecting prior appropriators as long as the applicant only withdraws water during periods of high flow. A minimum flow condition will be placed on the permit to protect the rights of prior appropriators. This condition will require that the applicant cease pumping when flows in the Little Missouri River at the Medora gage are 20 cfs or less. The NPS has expressed concern that the recommended 20 cfs minimum flow condition will not be sufficient to protect federal reserved water rights within the national park, but there has been no negotiated agreement or judicial determination that the Park has reserved water rights. The NPS did not provide sufficient documentation of its claims to enable the State Engineer to determine whether a reserved right exists, nor has the NPS given any indication as to the quantity of water needed to meet the primary purposes of the portion of the Park reserved from the public domain. Assuming for purposes of argument that the NPS does have a reserved water right associated with the Theodore Roosevelt National Park, determination of impacts to this unquantified reserved water right would be speculative at best.

The second criterion that must be met is that the proposed means of diversion or construction are adequate. The proposed means of diversion is adequate. The adequacy

of the design and construction of the storage reservoir will be addressed by the construction permit process.

The third criterion that must be met is that the proposed use of water is beneficial. The irrigation of the golf course will be a beneficial use of water.

The fourth criteria that must be met is that the proposed appropriation must be in the public interest. In determining the public interest, the state engineer must consider six factors. It is not necessary that all public interest factors be satisfied completely. Potential impacts must be weighed against the other factors.

The first factor under the public interest criterion is met by this application. The proposed appropriation will benefit the applicant by allowing them to develop the proposed golf course.

The second factor under the public interest criterion is also met. The golf course is expected to have a positive effect on the economy in the Medora area by giving tourists in Medora more to do, keeping them in the area longer. The golf course will also attract people to Medora who might not otherwise visit the area. According to a publication titled "The Economic Impact of Golf Course Operations on Local, Regional, & National Economies" (National Golf Foundation, Jupiter, FL, November 1992), golf facilities provide "jobs and income to a community" including the "salaries, wages tips and so forth paid to those actually working at the facility" and "the job opportunities created and income earned by others in the community from the facility's purchase of services, equipment, and supplies to maintain its day-to-day operation". The report also states that golf facilities "induce tourist traffic" and explains that "to the extent that a facility induces visitations from non-residents, local restaurants, hotels, service stations, other retailers -- and the people they employ – can benefit from sales they might not otherwise realize". According to the report, golf facilities can also benefit the economy through sales and property taxes.

The third factor under the public interest criterion is the effect on fish and game resources and public recreational opportunities. The National Park Service expressed concern that the proposed diversion could adversely impact water-dependent flora and fauna along the Little Missouri River within Theodore Roosevelt National Park. However, the NPS has indicated that there is insufficient data available to quantify the

amounts of water necessary to protect the water-dependent resources of Theodore Roosevelt National Park and that insufficient data exists at this time to determine the effects of the proposed withdrawal on park resources. Therefore, there is no basis on which to say that the proposed appropriation would harm the water-dependent flora and fauna along the Little Missouri River. The North Dakota Game and Fish Department expressed concern regarding potential harm to the sturgeon chub by impingement in the pump intake, but these concerns will be addressed in the design of the intake. The Badlands Lutheran Ministries expressed concern regarding the effect the proposed appropriation may have on their campers, but there will be no apparent negative effect to them or public recreational opportunities associated with the river. The golf course will provide new public recreational opportunities in Medora.

The proposed appropriation will not hinder any alternate uses of water that might be made within a reasonable time or cause harm to other persons. The applicant appears to have both the intent and the ability to complete the appropriation. Therefore, the final three factors under the public interest criterion are met by this application.

Of the six factors that must be considered in determining the public interest, five are definitely met. The only questionable factor is the affect on fish and game resources and public recreational opportunities. The proposed golf course will provide new public recreational opportunities, but insufficient data exists at this time to determine the effects of the proposed withdrawal on water-dependent resources along the river and public recreational opportunities associated with the river. Given this lack of data it cannot be said with certainty that there will be no undue impacts. However, there is no evidence to substantiate claims that the proposed appropriation would unduly affect fish and game resources and public recreational opportunities. On the contrary, it appears that the potential for undue impacts will be minimal given the timing of the proposed withdrawals, the high flows that are frequently available in the river during that time, and the recommended minimum flow condition that will restrict the applicant from pumping when the flow in the river at Medora is less than 20 cfs. The fact that potential impacts to fish and game resources and recreational opportunities associated with the river cannot be determined with any certainty is offset by the fact that the other five public interest factors are met. Therefore, it is found that the proposed appropriation is in the public interest.

The criteria described in Section 61-04-06 of the North Dakota Century Code are met by this application, provided the conditions listed below are attached. I recommend that water permit application No. 5508 be approved for the appropriation of 400 acre-feet of water annually from the Little Missouri River during the period from March 1 to July 1 at a maximum pumping rate of 5,000 gpm to be stored and later used to irrigate 100 acres of land associated with a golf course. The following conditions shall apply:

1. This water permit is granted subject to water use from the source by senior appropriators. Withdrawals shall cease upon order of the State Engineer.

2. Failure to comply with any order of the State Engineer may result in forfeiture of this water permit. This includes the withdrawal of water at times that are not authorized.

3. Pumping shall cease when the flow in the Little Missouri River is 20 cfs or less at the U.S. Geological Survey gaging station at Medora. The permit holder shall check the flow in the river before starting to pump and shall monitor the flow in the river while pumping. The permit holder will be informed as to the method to be used to determine the flow in the river. This condition is subject to modification by the State Engineer.

4. The volume of water used annually for irrigation may not exceed three acre-feet of water per acre.

5. Prior to withdrawing water from the Little Missouri River, a totalizing flow meter shall be installed from which the quantity of water pumped can be determined. The flow meter is subject to the approval of the State Engineer and shall be available for inspection by a representative of the State Engineer. The flow meter shall be maintained in working condition at all times.

6. This water permit does not authorize the construction of any type of dam or crossing on the Little Missouri River.

Karen Goff
Water Resource Engineer